Probing plasma irregularities with multiple L-band satellite signals

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Enhanced plasma density gradients and irregularities in Ionosphere make impact on L-band (1-2 GHz) satellite signals. These propagation effects, typically seen as signal delays and amplitude variation through refraction and diffraction, represent the electron density between the satellite and receiver. The number of available L-band satellites and frequencies increases and the coverage has become better also for small scale studies in high latitudes. Global Navigation Satellite System (GNSS) signals can be used to study the dynamics around the magnetic field lines with EISCAT Tromsø radars. With the same principle as GNSS, low-frequency Synthetic Aperture Radar (SAR) satellite images are considered as a different type of ionospheric measurements. These two measurements provide different spatial and temporal resolutions for coordinated experiment with Incoherent Scatter radars. This paper presents recent experimental studies under the EISCAT Peer-Review Programme and discusses future developments.